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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,591	03/23/2000	Jung Chuan Chou	H000010	1107

7590 04/01/2003

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EXAMINER
ORTIZ, EDGARDO

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/533,591	Applicant(s) Chou Et.al.
	Examiner Edgardo Ortiz	Art Unit 2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jan 13, 2003* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-11* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

This Office Action is in response to an Appeal Brief filed January 13, 2003.

Response to Arguments

1. In view of the Appeal Brief filed on January 13, 2003, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(a) file a reply under 37 CAR 1.111 (if this Office action is non-final) or a reply under 37 CAR 1.113 (if this Office action is final); or,

(b) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CAR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CAR 1.193(b)(2).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Covington et.al. (U.S. Patent No. 4,502,938) in view of Applicant's admitted prior art as disclosed on page 4, lines 28-30 and page 5, lines 1-16 of the instant application. With regard to Claim 1, Covington teaches a semiconductor substrate (3), a gate oxide layer (6) on the semiconductor substrate, an ion-selective membrane layer overlying the gate oxide layer, a source/drain (1, 2) in the semiconductor substrate beside the ion-selective membrane layer, a metal wire on the source/drain and a sealing layer (11) overlying the metal wire and exposing the ion-selective membrane layer.

However, Covington fails to teach a tungsten oxide layer which overlies the gate oxide layer in the gate structure. Applicant's admitted prior art discloses that "The composition of the WO3 layer and its properties vary with the selected method and condition during preparing the WO3 layer. Most of the WO3 layers are amorphous, polycristalline or crystalline". Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the Covington structure to include a tungsten oxide layer which overlies the gate oxide layer in the gate structure, as clearly suggested by Applicant's admitted prior art, in order to provide a gate structure including a material such as amorphous tungsten oxide, which has a large resistivity and thus is ideal for use as a sensor.

With regard to Claim 2, a further difference between the claimed invention and the teachings of Covington and Gardner is, the length, width and width/length ratio of the channel region. It would

have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include the claimed dimensions, in order to provide a channel region which reduces the source-to-drain capacitance.

With regard to Claim 3, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, a semiconductor substrate being P-type. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include a semiconductor substrate being P-type, since it is a well-known practice in the art to provide a semiconductor substrate with a specific polarity so that the active regions and the channel can be doped for proper transistor functioning.

With regard to Claim 4, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, a semiconductor substrate having a resistivity of 8 to 12 ohms-cm. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a semiconductor substrate having a resistivity of 8 to 12 ohms-cm, based on the dopant and the polarity of the material used for the semiconductor substrate.

With regard to Claim 5, Covington teaches a semiconductor with a lattice parameter of (1.0,0).

With regard to Claim 6, Covington and Applicant's admitted prior art fails to teach a gate oxide having a thickness of about 1000Å. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include a gate oxide having a thickness of about 1000Å, in order to provide a proper gate oxide based on the dielectric constant of the metal oxide used in the gate structure.

With regard to Claim 7, Covington and Applicant's admitted prior art fails to teach a thickness of a tungsten oxide layer that is at least 1000Å. Gardner teaches a tungsten oxide layer that has a thickness which is variable depending on the specific application. Therefore, it would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include a tungsten oxide layer that is at least 1000Å, in order to provide a tungsten oxide layer with the thickness required depending on a specific application.

With regard to Claim 8, Covington teaches a metal wire consisting of Al.

With regard to Claim 9, Covington teaches a sealing layer consisting of epoxide resin.

With regard to Claim 10, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, a source/drain being N-type. It would have been

an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a source/drain being N-type, since it is a well-known practice in the art to provide a specific polarity dopants to the active regions, relative to the channel or substrate, for proper transistor functioning

With regard to Claim 11, a further difference between the claimed invention and the teachings of Covington and Applicant's admitted prior art is, N-type impurities consisting of phosphorous. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Applicant's admitted prior art to include N-type impurities consisting of phosphorous, since it is a well-known practice in the art to provide a source/drain with a Group-V dopant in order to provide an N-type active region.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183 or by fax at (703) 308-7724. In case the Examiner can not be reached through a direct telephone call, you might call Supervisor Eddie Lee at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO / AU 2815

3/27/03

EDDIE LEE
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